**Stormwater and Riverbank Sampling and Assessment Plan - Response to Comments Matrix**
**Portland Harbor Superfund Site, Swan Island Basin Project Area**
**Portland, Oregon**

| # | Reference No. | Document | EPA Comments on Draft Stormwater and Riverbank Assessment and Sampling Plan, Comments Dated 10/22/2021 | SIB Response 11/11/2021 | EPA Comments on Draft Stormwater and Riverbank Assessment and Sampling Plan, Comments Dated 11/19/2021 | SIB Response | Assigned To: |
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| General Comments on the SRASP | | | | | | | |
| 1 | 2001 | Traffic Control | A traffic control plan should be included in the SRASP or as an attachment to the health and safety plan (HASP) in the SIB RD Group's Pre-Design Investigation (PDI) Work Plan. Reconnaissance of proposed stormwater sampling locations during the September 22, 2021 site visit revealed that some of the proposed sample locations are at manholes that are located within streets with vehicle traffic. These locations will require traffic control to allow for safe sampling, and procedures for traffic control that are consistent with local requirements should be provided for EPA review prior to sampling in the SRASP or HASP attachment. | Noted. Traffic control plans (TCPs) will be provided for locations requiring them. The TCPs will be attached to the HASP in the PDI Work Plan or the updated SRASP and will be provided to EPA review prior to equipment deployment and sampling. | Comment addressed, pending EPA's review of the TCPs before the start of sampling. | The TCPs have been developed and are included within the HASP. EPA will receive the TCPs as part of the PDI Work Plan Submittal (which includes the HASP as an appendix) on December 10, 2021, prior to the start of the proposed stormwater sampling. | BWG |
| Specific Comments on the SRASP | | | | | | | |
| 1 | 2002 | Section 1.2 Purpose and Objectives, page 1-2: | Revise the text to state that sediment management areas (SMAs) are defined by the horizontal and vertical extent of contamination exceeding Portland Harbor Superfund Site (PHSS) Record of Decision (ROD) Table 21 remedial action levels (RALs) and/or principal threat waste (PTW) thresholds. | The text will be revised as follows: In this SRASP, SMAs are defined by the horizontal and vertical extent of contamination exceeding PHSS ROD Table 21 remedial action levels (RALs)and/or principal threat waste (PTW) thresholds (Figure 102)(EPA, 2017). | | | BWG |
| 2 | 2003 | Section 2.1 Stormwater Discharge, page 2-1 | Sediment management area (SMA) refinement needs to consider both surface and subsurface sediment exceedances of all remedial action levels (RALs) applicable outside of the navigation channel and principal threat waste (PTW) thresholds (see Remedial Design [RD] Principle #1 in Section 1.4 of EPA's Remedial Design Guidelines and Considerations [RDGC]). | Noted. | While accurate, this was not an EPA comment on the SRASP.<br><br>This EPA comment was missing from the SIB Group's response to comments table. Provide the clarification in future documents.<br><br>Revise the text to clarify that source control authority has been transferred to EPA for select sites, including the U.S. Coast Guard Facility and the US Navy and Marine Reserve Center. | The following sentence was added at the end of the last paragraph of Section 2.1: "Source control authority has been transferred to EPA for select sites, including the U.S. Coast Guard Facility and the U.S. Navy and Marine Reserve Center." | BWG |
| 3 | | Section 2.2 Riverbank Conditions, page 2-2 | EPA has the following comments on this section and the text should be revised accordingly: | | | | N/A |
| 3a | 2004 | Section 2.2 Riverbank Conditions, page 2-2 | The opening paragraph and subsequent bullets discuss three riverbank locations that were identified in the Portland Harbor Superfund Site (PHSS) Record of Decision (ROD) as containing known contamination. Figure 3-2 identifies additional riverbanks that are known to exceed cleanup levels (CULs) based on previous investigations. EPA requests that future deliverables describe locations and extents of contaminated riverbanks, including ROD-identified and non-ROD-identified riverbanks. | The extents of ROD and non-ROD riverbanks have been added to Section 2.2 of the SRASP. | | | BWG |
| 3b | 2005 | Section 2.2 Riverbank Conditions, page 2-2 | Revise the text in the final paragraph of the section and elsewhere in the report as needed to clarify that, per ROD Section 14.2.9.5, "contaminated riverbanks will be remediated through this cleanup where they are contiguous with in-river contamination or where they pose a risk of recontamination to the Selected Remedy" (EPA 2017). | The text has been revised as recommended: Pursuant to ROD Section 14.2.9.5, contaminated riverbanks will be remediated through this cleanup where they are contiguous with in-river contamination or where they pose a risk of recontamination to the Selected Remedy (EPA 2017). | | | BWG |
| 3c | 2006 | Section 2.2 Riverbank Conditions, page 2-2 | Revise the text to reflect that RD should include consideration of active cleanup measures (e.g., excavation, capping) for contaminated riverbanks, as required by the ROD and RDGC Appendix D. The text appears to suggest that the riverbank remediation will consist of only stabilization measures. | Noted. Stabilization may include active cleanup measures. The text has been revised as follows: The RD will include measures to remediate (stabilize via capping and/or excavation) the three ROD riverbanks and any other riverbanks within the SIB Project Area identified as needing remedial action. These riverbanks will be determined based on the combined results of the first and second phases of the riverbank evaluation in accordance with the criteria specified in the ROD. | | | BWG |
| 4 | 2007 | Section 3.1 Stormwater Outfall and Conveyance System Sampling, page 3-1 | Section 3.1 indicates that in-line sediment trap samples will be composited into two separate sampling periods: the wet season from November through March, and the dry season from July through October. However, Section 4.1.5 states that in-line sediment trap sample bottles will be removed and replaced at the end of January, April, and June for compositing and analysis representing wet season accumulation, and that bottles will be deployed in June until October to represent dry weather accumulation. The SRASP should clarify the sampling period that are planned and indicate whether they correspond with wet or dry periods. Also indicate whether the dry-weather sampling period may be terminated early, in the event of predicted wet weather prior to the end of October that is common in Portland. | Section 3.1 has been revised to include this text: level-velocity loggers and in-line sediment traps will be installed in sub-basin laterals to the manholes to collect continuous data that will be composited into two separate sampling periods (wet season from December 2021 through June 2022 and dry season from July through October 2022) for comparison to the data collected during the three individual HVS storm events. The dry season deployment may be terminated early if wet weather before the end of October is predicted. | Section 4.1.5 states that sample bottles will be removed and replaced at the end of February, April, and June 2022 for compositing and analysis of wet season accumulation. This suggests that the three bottles will be composited together as a single sample for a lab analysis. EPA's conditional approval assumes that the intention is that the February and April bottles will be frozen until June bottles are retrieved; and then one composite of the three samples will be made into a single sample for lab analysis. If this is not the case, a field change request may be submitted to clarify the approach. | EPA's assumption is correct. The intention is that the February and April bottles will be frozen until June bottles are retrieved, and the three samples will be composited into a single sample for lab analysis. No revisions were made to the text. | BWG |

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| 5 | 2008 | Section 3.1 Stormwater Outfall and Conveyance System Sampling, page 3-1 | This section indicates that no stormwater or stormwater solids sample collection is planned for outfalls that have historically discharged to the project area from the Portland Shipyard because those stormwater discharges are being rerouted for treatment prior to discharge. The updated stormwater conveyance system at the Portland Shipyard is designed to overflow to the project area during storm events in excess of the 2-year 24-hour storm. The SIB RD Group should consider whether stormwater overflows from the Portland Shipyard during precipitation events that exceed the design storm (2-year 24-hour) should be evaluated in the SEDCAM modeling described in the Sufficiency Assessment Report (SAR). | The SIB RD Group will consider and evaluate whether stormwater discharged from the shipyard should be evaluated as part of the SEDCAM modeling proposed in the PDI Work Plan. That evaluation will be informed by a combination of available data characterizing shipyard discharges, future monitoring data for shipyard outfall basins (M1, G, Pier C, Q, and R) collected as part of the NPDES 1200-Z industrial stormwater permit, and flow rate information available in the design documents for the recent improvements to the shipyard stormwater system. | | | BWG/PGG |
| 6 | 2009 | Section 3.1 Stormwater Outfall and Conveyance System Sampling, bullet 1, page 3-1 | The timing and representativeness of stormwater solids data that are referenced in this bullet should be clarified. Some of the stormwater solids data presented in the SAR were collected before source control measures (SCMs) were implemented in the outfall basins and are no longer representative of current conditions. This fact is acknowledged in the second bullet in Section 3.1, but the first bullet should clarify whether the referenced concentrations represent post-SCM conditions. | The text of the first bullet has been revised to indicate that pre-source control measure (SCM) stormwater solids data for PCBs exceeded the CUL. No post-SCM data has been collected to assess the effectiveness of SCMs. The second bullet has been revised as follows: While pre-SCM data for stormwater and stormwater solids is available for all SIB city outfall basins, no recent post-SCM data is available to determine whether these solids could recontaminate future remedial caps, enhanced natural recovery areas, or monitored natural recovery areas. | | | BWG |
| 7 | 2010 | Section 3.1 Stormwater Outfall and Conveyance System Sampling, bullet 2, page 3-1 | Clarify the intent of establishing “baseline” conditions. Typically, “baseline” conditions are established for future comparisons to evaluate changes from baseline. Based on the data objectives described in Section 3.0, it seems the intent of these data is to evaluate potential for recontamination of sediment and not to establish basis for comparison to future stormwater discharges. | Noted. The word "baseline" has been deleted from that bullet. | | | BWG |
| 8 | | Section 3.1 Stormwater Outfall and Conveyance System Sampling, page 3-1, and Table 3-1 | EPA has the following comments on this section and the text should be revised accordingly: | | | | N/A |
| 8a | 2011 | Section 3.1 Stormwater Outfall and Conveyance System Sampling, page 3-1, and Table 3-1 | Clarify the statement that “Advance field reconnaissance will identify fallback HVS sampling locations if during a large storm event the proposed manholes are flooded to the point that the proposed sampling would be infeasible at those locations.” Comparisons of pipe invert elevations to river stage elevations should be completed before mobilizing to the field so that the sample locations and necessary preparations (e.g., traffic control, access notifications) are coordinated before arriving to the sampling location. | This sentence has been revised as follows: Table 3-1 identifies alternate HVS locations to use if the primary manholes are flooded because of a high tide or storm event and cannot be sampled (i.e., the SIB river stage elevation [as measured via a water level probe installed in SIB and corrected to Morrison Bridge Datum Correction (MBDC)] is predicted to be higher than a manhole invert elevation). Comparisons of pipe invert elevations to river stage elevations will be completed before mobilizing to the field, so that the sample locations and necessary preparations (e.g., traffic control, access notifications) can be completed in advance. | | | BWG |
| 8b | 2012 | Section 3.1 Stormwater Outfall and Conveyance System Sampling, page 3-1, and Table 3-1 | Based on the reported pipe invert elevation at Manhole AAQ003 of 0.99 feet Morrison Bridge Datum Correction (which EPA interprets as meaning the gage height reported on the USGS staff gage at the Morrison Bridge in the Willamette River), the SIB RD Group should consider whether it is feasible to sample stormwater at that location or if another location should be identified as the primary sampling location. Observations of historical data from the USGS gaging station at Morrison Bridge (Monitoring location 14211720) suggest that gage heights rarely drop below 1 foot, and wet season gage heights are commonly in the 4- to 10-foot range. | HGL agrees with the EPA's analysis. The proposed HVS monitoring location for the M-3 outfall basin will be updated to be AAQ004 with a pipe invert elevation of 3.11 MBDC, slightly below the estimated 4- to 10-foot range for the wet season. This location is preferred because it captures most of the discharge in the M-3 outfall basin. HGL will target precipitation events meeting JSCS criteria and near low tide to avoid sampling river water. In order for the pipe invert elevation to be above wet season river elevations, manhole AAQ118, located farther southeast along N Basin Avenue, would require monitoring (estimated 10.08 MBDC); this manhole does not capture the maximum amount of discharge from the basin. | | | BWG |
| 9 | 2013 | Section 3.1 Stormwater Outfall and Conveyance System Sampling, footnote 2, page 3-2 | The HVS sampling methodology using the Gravity Marine PR2900 system is a time-weighted sampling method and not flow-weighted sampling. Revise the text accordingly. | The text has been revised to state, "This sampling methodology is a form of time-weighted sampling." The sampling methodology is directly informed by flow measurements so that the selected timing and duration of sample collection accounts for flow variations and provides a similar result as explicit flow-weighted sampling. | | | BWG |

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| 10 | 2014 | Section 3.1 Stormwater Outfall and Conveyance System Sampling, page 3-3 | Clarify how data from manual solids grab sampling and sediment trap sampling will be used in the SEDCAM model compared to representative end-of-pipe direct discharge. Appendix A of the draft SAR describes the SEDCAM modeling approach but does not specifically describe the use of stormwater solids data. Section 4.1 of Appendix A in the draft SAR describes that stormwater concentrations and total suspended solids concentrations will be inputs that will be used to estimate contaminant concentrations in suspended sediment that is discharged from the outfalls but does not describe how stormwater solids data will be incorporated into the evaluation. This data use should be clarified in the SRASP and the revised SAR. | SEDCAM makes use of sediment loading rates associated with discharges. None of the proposed sampling will literally be "end of pipe" direct discharge sampling. Samples will be collected at manholes upstream of outfalls with sampling locations selected to be as close as possible to end-of-pipe while avoiding potential impacts of riverwater backing into those pipes during high river stage. The proposed sampling approach uses multiple techniques, and the different measurement techniques provide a means of cross checking and verifying results. Manual grab samples and sediment trap sampling will provide a point of consistency and comparison among all of the outfalls included in the study. The grab sample results will help determine variability within the site and whether results from sampled outfalls can reasonably be extrapolated to apply to outfalls within the site that are not sampled. | | | PGG/HGL |
| 11 | | Section 3.1 Stormwater Outfall and Conveyance System Sampling, page 3-3 | EPA has the following comments on stormwater and stormwater solids data objectives in this section and the text should be revised accordingly: | | | | N/A |
| 11a | 2015 | Section 3.1 Stormwater Outfall and Conveyance System Sampling, page 3-3 | Revise the text to clarify why stormwater solids sampling in pipe laterals is not proposed for the M-3 drainage basin. | See the response to 8b and updated Table 3-1. Solids sampling will be performed at the inlets of laterals to manhole AAQ004 where the inlets are installed above the estimated lowest river elevations. | | | BWG |
| 11b | 2016 | Section 3.1 Stormwater Outfall and Conveyance System Sampling, page 3-3 | Revise the text to clarify why in-line sediment traps and/or manual solids grabs are not proposed for manhole AAM107 which is identified for high-volume, (HVS) time-weighted sampling. | The following information regarding this location is provided in footnote 4: In-line sediment trap deployment and manual collection of solids samples are not proposed at this location due to past and likely future river backflow. If proposed field reconnaissance during high tide indicates that a sediment trap can be installed above the highest river elevation, then a sediment trap will be installed at this location, with the inlet above the highest river elevation. The proposed HVS monitoring and solids sampling location may be moved to AAM104 where river backflow is less likely (i.e., pipe invert elevation of 13.01 feet MBDC versus 6.58 feet MBDC at AAM107). | | | BWG |
| 12 | 2017 | Section 3.1 Stormwater Outfall and Conveyance System Sampling, page 3-3 | EPA understands that sampling locations at the seven private facilities listed will be selected after site inspections are performed and expects that the list of selected outfalls be provided to EPA before sampling at the private facilities. Once selected, provide an addendum to the SRASP with information on the selected outfall basins or sampling locations (e.g., end-of-pipe or in manholes) for any of the private facilities. The rationale for the selected outfalls should consider the size of the area that drains from the outfall, the land use within the outfall basin, previous stormwater data from the outfall (if any), sediment concentrations adjacent to the outfall, and whether the selected outfall basin can be used to represent contaminant concentrations in stormwater from other outfalls at the facility. | Note that the number of private locations has been revised because no flow has been observed from one proposed location (Port of Portland Dredge Base). The following sentences have been added to this section: Sampling locations at the six private facilities listed above will be selected after site inspections are performed, and the list of selected locations and the outfalls to which they discharge will be provided to EPA before monitoring and sampling at the private facilities. Once selected, HGL will provide an addendum to the SRASP with information on the selected outfall basins or sampling locations (e.g., in manholes or catch basins) for the private facilities. The rationale for the selected outfall basins will consider the size of the area that drains from the outfall, the operations within the outfall basin, previous stormwater data from the outfall (if any), sediment concentrations adjacent to the outfall, and whether the selected outfall basin can be used to represent contaminant concentrations in stormwater from other outfalls at each facility. | | | BWG |
| 13 | 2018 | Section 3.1 Stormwater Outfall and Conveyance System Sampling, page 3-4 | Revise the text to clarify why source control tracing was proposed for manhole AAQ011 as part of the PDI. The manual solids grab sample from AAQ011 is the only sample included within the scope of work that has been identified for “source tracing.” No other up-gradient sampling for source tracing is proposed elsewhere in the M-3 drainage basin, which is large and includes several branches, or from any other City drainage basin. It is unclear how source tracing in this one location, rather than locations further downgradient, addresses data objectives applicable to the in-water project. If a manual solids grab sample is to be collected from AAQ011, in-line sediment trap samples should also be collected at AAQ011 consistent with the sampling approach at AAM104, AAM169, AAQ003, AAP957, and AAM131. | After further consideration, HGL has determined that this proposed sampling will not be necessary. | | | BWG |

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| 14 | 2019 | Section 3.2 Riverbank Characterization, page 3-5 | The text states that, “Riverbank soil sampling will be deferred until the SMAs have been refined and the delineation of erodible riverbank areas has been completed.” Note that the requirement to perform chemical characterization of riverbank soils is not limited to areas adjacent to SMAs and/or erodible soils. Per RDGC Appendix D Section 2.2.2, it is expected that the entire lateral extent of the riverbank will be characterized for ROD Table 17 and Table 21 contaminants. Revise the text to be consistent with RDGC Appendix D. | The text has been revised to replace the statement quoted in the comment with this revision: "Riverbank soil sampling will be deferred until the proposed first phase riverbank survey has been completed. EPA guidance for riverbanks (EPA 2019) requires that the entire lateral extent of the riverbank be characterized." The proposed riverbank sampling locations will be identified in an addendum to the FSP that will be prepared after the first phase riverbank survey and BANCS modeling are complete. That FSP addendum will be subject to EPA and ODEQ review and approval, and consistency with RDGC Appendix D can be confirmed at that future step. | | | BWG |
| 15 | 2020 | Section 3.2 Riverbank Characterization, No. 2, page 3-5 | The text states that data for the BANCS analysis will be collected in, “up to 150 transect locations” (**emphasis added**). Clarify what conditions would preclude data collection at the 150 transects identified on Figure 3-2. | A total of 150 transects were selected for initial planning purposes. The actual number of transects has been updated to be 126. Text revised to read, "…riverbank soil sampling for chemical characterization will be performed at 126 riverbank transect locations (see Figure 3-2)". | The text in the Revised SRASP does not match the text indicated in the SIB Group's response. The Revised SRASP text retains some language from the Draft SRASP: "…up to 126 locations." EPA’s conditional approval assumes the language in Section 3.2 was intended to match the language in the SIB Group’s response and that chemical characterization will be performed at 126 riverbank transect locations. | The words "up to" were deleted from the second bullet in the list on page 3-6 so the revised statement reads, "…collect data sufficient to run a BANCS analysis for 126 transect locations…" | BWG |
| 16 | 2021 | Section 3.2 Riverbank Characterization, bulleted list, page 3-6 | Revise the text to include a discussion of situations where a contaminant that is not included in ROD Table 21 exceeds a ROD Table 17 riverbank soil CUL (EPA 2017). When the ROD CULs are exceeded, EPA recommends a lines of evidence approach to evaluate whether the RAO can be achieved by the planned action. | The bullets have been revised as follows:<br>-If ROD Table 17 COC concentrations are less than the CULs, no action will be necessary.<br>-If ROD Table 17 COC concentrations are above the CULs, the vertical and lateral extent of the exceedances will be delineated, a BANCS analysis (or equivalent) will be performed, and a lines of evidence approach will be presented to evaluate whether RAO 9 can be achieved by a planned action.<br>-If ROD Table 21 focused COC concentrations are between the CULs and the RALs, the vertical and lateral extent of the exceedances will be delineated, a BANCS analysis (or equivalent) will be performed, and the RD for the riverbank will be designed to resist erosion (e.g., from stormwater runoff, tidal fluctuations, propeller wash).<br>-If ROD Table 21 focused COC concentrations exceed the RALs, the vertical and lateral extent of the exceedances will be delineated, a BANCS analysis (or equivalent) will be performed, as noted above, and the RD for the riverbank will be designed to resist erosion (e.g., from stormwater runoff, tidal fluctuations, propeller wash). | The additional text in the Revised SRASP implies that the riverbank remedy will only address erosion. EPA notes that removal and/or capping of contaminated soils may be required. Provide this clarification in future documents. | The text in the last bullet on Page 3-7 was revised to read, "...and the RD for the riverbank will be designed in accordance with the requirements of the ROD. Remedial technologies to address contaminated riverbank soils may include bank stabilization to resist erosion (e.g., from stormwater runoff, tidal fluctuations, propeller wash), removal of contaminated soils, and/or capping of contaminated soils." | BWG |
| 17 | | Section 4.1.1 HVS Stormwater Sampling Methodology for City Outfall Basins, pages 4-2 and 4-3 | | | | | N/A |

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| 17a | 2022 | Section 4.1.1 HVS Stormwater Sampling Methodology for City Outfall Basins, pages 4-2 and 4-3 | The Greyline Stingray 2.0 measures water level and velocity, and flow and volume are calculated using measured or assumed cross-sectional geometry of flow. Revise the text to specify how flow geometry will be determined and used to calculate flow and volume. | This discussion in Section 4.1.1. has been moved to Section 4.1.5 as follows: A Pulsar Measurement Greyline Stingray 2.0 water-level-velocity sensor will also be incorporated into the stormwater sampling program in the city outfall basins to continuously measure water levels and velocities. These parameters will be converted to flow and volume using the cross-sectional geometry of the flow in the pipe during storm events as well as during the entire wet and dry seasons. | The equations presented in Section 4.1.5 are incorrect for calculating flow and volume. The first equation (Q=π*D^2/4*v) is only applicable at full pipe flow, which is not expected to occur in stormwater discharge. The geometry of partial pipe flow in circular pipes is more complicated and the equation to calculate cross-sectional area is different if the flow is less than or greater than half full. Software packages for flow measurements may automate the calculation of cross-sectional area based on the diameter of the pipe and depth of flow. Open channel hydraulics text should be reviewed to determine the cross-sectional flow area (A) that can be used to calculate flow (Q) using the measured velocity (v) by: Q=A*v.<br><br>The second equation (Volume=π*r^2*D) is unclear. The total volume is calculated by integrating flow over time. For discrete flow measurements (Qi) measured at time increments (ti), the total volume can be calculated by:<br><br>Provide corrections and clarifications in future documents. | The text was revised to read, "The conversion will be made using Manning's equation (Chow, 1959) with adaptations specific to flow in partially filled pipes:<br><br>$Q = (1.49/n)\ A\ (R_h^{2/3})\ S^{1/2}$<br><br>where:<br><br>Q = flow rate<br>n = Manning roughness coefficient<br>A = cross-section area of the flow<br>Rh = hydraulic radius<br>S = slope<br><br>It is expected that during sampling events the stormwater pipes will be flowing partially full. Flow calculations for partially full pipe flow are complicated by two considerations: (1) the equations for calculating the hydraulic radius (Rh) are different depending on whether the pipe is flowing more than half full or less than half full, and (2) the Manning roughness coefficient must be considered to vary as a function of the ratio of depth of flow to diameter for the calculations to be accurate. Camp's method (Camp, 1946) will be used to determine the appropriate Manning roughness coefficient based on the depth of flow relative to the pipe diameter. | BWG |
| 17b | 2023 | Section 4.1.1 HVS Stormwater Sampling Methodology for City Outfall Basins, pages 4-2 and 4-3 | Clarify how the Grayline Stingray 2.0 sensor will be used to collect a flow-weighted sample or revise the text to indicate that a time-weighted sample will be collected. The text on page 4-3 and the SOP for HVS both indicate that water will be pumped at a constant flow rate of approximately 1.5 liters per minute, which results in a time-weighted and not a flow-weighted sample. | The text has been updated to indicate that the Grayline sensors will be used to collect time-weighted water level and velocity measurements during HVS stormwater/stormwater solids sampling as well as during the deployment period for the in-line sediment traps (December 2021 through October 2022). | | | BWG |
| 17c | 2024 | Section 4.1.1 HVS Stormwater Sampling Methodology for City Outfall Basins, pages 4-2 and 4-3 | If a submersible pump and intermediate carboy are used for sample collection, the pumping rate of the submersible pump should match the combined pumping rate of the HVS peristaltic pump and the whole water sample pump. Excess water should not be allowed to overflow in the intermediate carboy since this could result in accumulation of solids at the bottom of the carboy which would bias the sample results. | The following text has been added: The pumps will be turned on/off to maintain the level in the carboy at approximately 80% capacity without overflowing. | | | BWG |
| 17d | 2025 | Section 4.1.1 HVS Stormwater Sampling Methodology for City Outfall Basins, pages 4-2 and 4-3 | Clarify the approach for sample analysis of the whole water sample. The text in the final paragraph on page 4-3 indicates that solids will be centrifuged and analyzed for some ROD COCs and that stormwater will also be sampled for ROD COCs. Analysis of stormwater should include the whole water sample, and not the supernatant after the centrifuge process. | The sentences have been revised as follows: "The whole water sample will be analyzed for ROD Table 17 COCs, except the PCBs, OCPs, and dioxins and furans. If there is a sufficient volume of stormwater solids available in the carboy after the removal of the whole water sample, those solids will be separated by centrifuge in the laboratory and analyzed for ROD Table 17 COCs, except the PCBs, OCPs, and dioxins and furans." | | | BWG |
| 18 | 2026 | Section 4.1.2.1.3 Particulate Phase Concentration, page 4-5 | Revise the units for the results of the calculation presented in Section 4.1.2.1.3. The resulting units of the calculation presented should be picograms per milligram (pg./mg) and not micrograms per liter (as indicated on the right side of the equation) or pg. to proton masses (as indicated in the fourth bullet point below the calculation). The discussion of proton masses in the fourth bullet is unclear and does not appear relevant to the equation that is presented. | The equation has been updated accordingly. | The units in the result of the equation in Section 4.1.2.1.2 was incorrectly changed to pg/mg and should be revised to pg/L (consistent with the Draft SRASP). The equation presented in Section 4.1.2.1.3 appears to be missing a division symbol and should be revised. Provide revisions in future documents. | Agree with comment. Units were corrected to pg/L for the equation in Section 4.1.2.1.2.<br><br>Equation in Section 4.1.2.1.3 was revised to include the division symbol, and "Particulate Phase" was revised to "Particulate Phase Mass" to be consistent with the text. The final bullet under this equation was revised to read, "The resultant ROD Table 17 COC concentration is in micrograms per kilogram, which is equivalent to pg/mg." | BWG |
| 19 | | Section 4.1.3 Automatic Stormwater Sampling Methodology for Private Outfalls, page 4-6 | | | | | N/A |

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| 19a | 2027 | Section 4.1.3 Automatic Stormwater Sampling Methodology for Private Outfalls, page 4-6 | Describe how autosamplers will be installed and programmed to collect samples. This description should identify whether the sample will be a grab sample, flow-weighted composite sample, or time-weighted composite sample, what will trigger sample collection (e.g., flow volume, flow duration), the volume of sample that will be collected, methods of flow measurement, and how the autosamplers will be monitored during the storm event. | This text has been revised as follows: "The autosamplers will be installed at locations that best represent stormwater flow to selected outfalls to the SIB. The autosamplers will be installed either inside a stormwater feature (manhole or catch basin) or adjacent to the feature at ground level depending on location conditions, access, and security. The autosamplers will be connected to a compatible flow sensor that will establish when flow is elevated above baseline conditions and record real-time velocity and volume. The autosampler will have a dedicated 5-gallon whole water sample container from which the sampler will pump representative unfiltered stormwater at a rate and frequency dependent on the measured flow rate and volume (i.e., a storm-event, flow-weighted, composite sample). The autosampler will be programmed to collect sample water throughout an event meeting JSCS criteria, pausing when flows temporarily subside during “flashy” storm events. The autosampler will be monitored and potentially controlled by a remote laptop, but field crews may check the autosampler to ensure that it is working properly. After the whole water sample has been collected, the field crew will retrieve the sample container and deliver it on ice to the processing facility, where the stirred volume will be subsampled for ROD Table 17 COCs. Minimum analytical holding time and preservative requirements will be observed." | | | OrbisLogic |
| 19b | 2028 | Section 4.1.3 Automatic Stormwater Sampling Methodology for Private Outfalls, page 4-6 | The timing of sample collection should be consistent with JCSC guidance. Specifically, samples should be collected within 3 hours of the onset of discharge, and a minimum of half of the samples should be collected during the first flush (defined in the JSCS as the first 30 minutes after the onset of discharge). Revise the text accordingly. | The sentence has been revised as follows: "Automated samplers do not provide the same benefits as the HVS methodology, but they are superior to grab samples because they provide flow measurements that are correlated with the timing of sample collection such that samples are obtained at times consistent with ODEQ/EPA 2005 JSCS guidance (i.e., samples will be collected within 3 hours of the onset of discharge, and a minimum of one sample will be collected during the first flush [defined in the JSCS as the first 30 minutes after the onset of discharge]) (ODEQ and EPA 2005)." | | | BWG |
| 20 | 2029 | Section 4.1.4 Manual Grab Stormwater Solids Sampling Methodology, page 4-6 | The third paragraph states that “Standing water in the manhole sump, if present, may be pumped off to simplify solids sample collection.” This sentence should read “Standing water in the manhole sump, if present, will be pumped off to ensure collection of a representative sample for stormwater solids.” | The sentence has been revised as follows: "Any standing water in the manhole sump will be pumped off to ensure collection of a representative sample of stormwater solids." | | | BWG |
| 21 | 2030 | Section 4.1.5 In-Line Sediment Trap and Flow Meter Installation and Sampling Methodology, page 4-7 | Describe whether sediment traps will be deployed in locations that are impacted by backflow during high river stage and how sediment trap data will be evaluated if/when backflow occurs where the sediment traps are deployed. | This text has been revised as follows: "The goal of the sediment trap sampling is to deploy the equipment in locations where backflow will not occur. To that end, sediment trap inlets will be installed above the estimated high river elevation in the pipes. If river stage levels are predicted to rise above these elevations during an upcoming stormwater event, then staff (including confined space and traffic control) will be mobilized to retrieve the sediment trap sample bottles before the backflow event and replace them afterward." | | | BWG |
| 22 | | Section 4.2. Riverbank Field Characterization – Phase 1 Assessment, page 4-9 | EPA has the following comments on this section and the text should be revised accordingly: | | | | N/A |
| 22a | 2031 | Section 4.2. Riverbank Field Characterization – Phase 1 Assessment, page 4-9 | The riverbank assessment should include data collection for all parameters required to perform the Bank Assessment for Non-Point Source Consequences of Sediment (BANCS) analysis, or equivalent, as outlined in the RDGC Appendix D. As written, the list of parameters is missing the bankfull height and vegetation root density from the bulleted list of proposed survey items on SRASP page 4-9. | The height of bank, bankfull level, and vegetation root density parameters have been added to the list of bulleted items. | | | BWG |
| 22b | 2032 | Section 4.2. Riverbank Field Characterization – Phase 1 Assessment, page 4-9 | The riverbank assessment survey should also include a qualitative assessment of the potential for wind- and boat-induced wave action to contribute to erosion. | This assessment metric has been added to the scope of work for the riverbank assessment survey. | | | BWG |
| 23 | | Table 2-1 Summary of Data Gaps and Proposed Data Collection and Table 3-1 Summary of Stormwater System Sampling Activities Locations | EPA has the following comments on Tables 2-1 and 3-1 and the SRASP should be revised accordingly: | | | | N/A |

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| 23a | 2033 | Table 2-1 Summary of Data Gaps and Proposed Data Collection and Table 3-1 Summary of Stormwater System Sampling Activities Locations | Revise Table 3-1 to identify the number of in-line sediment traps and stormwater solids grab samples that will be collected at each manhole location. | Table 3-1 has been updated with the number of in-line sediment trap and manual grab samples to be collected at each manhole location. | EPA notes that the column header for Collection Method also incorrectly includes the text Sample Frequency in Table 3-1. Revise as appropriate in future documents. | On Table 3-1, column header for Collection Method was edited to delete "and Sample Frequency". | BWG |
| 23b | 2034 | Table 2-1 Summary of Data Gaps and Proposed Data Collection and Table 3-1 Summary of Stormwater System Sampling Activities Locations | Revise Table 3-1 to provide the number of sampling events for each location and sample type. It could be helpful to create two separate sections for sample type, one for stormwater and one for stormwater solids. | Table 3-1 has been updated with the number of samples and types of media that will be collected during each type of sampling event. | | | BWG |
| 23c | 2035 | Table 2-1 Summary of Data Gaps and Proposed Data Collection and Table 3-1 Summary of Stormwater System Sampling Activities Locations | Manhole AAM170 is identified as the preferred alternative sample location for HVS sampling in the M-2 drainage basin in the event that AAM169 is not available. AAM170 represents only one of three branches of the City drainage basin leading to outfall M-2, and alone may not be representative of discharges from the entire basin. The SIB RD Group should identify data limitations if AAM169 is unavailable for sampling and consider whether stormwater samples should be collected from each of the three sub-basin branches that contribute to M-2 discharge. | We recognize the data limitations associated with sampling manhole AAM170 as an alternate to AAM169 when the river is at high stage due to combination of high tide and elevated river flow. The proposed approach includes pre-event monitoring of antecedent conditions including river stage, tidal conditions, river flow trends, and rainfall. The priority order for sampling M-2 will be (1) provided antecedent conditions are within parameters, sample at manhole AAM169; (2) if antecedent conditions are not within parameters, and the candidate sampling event is early in the season, postpone sampling until conditions allow sampling at manhole AAM169; (3) as a last resort when there may be few future sampling opportunities before the end of season, sample at manhole AAM170 and identify the data limitations. We considered sample collection from each of the three sub-basin branches that contribute to M-2 discharge, but that approach would require a substantial upgrade to the personnel and equipment mobilization necessary to support it. That upgrade seems excessive for a contingency approach. | | | BWG |
| 23d | 2036 | Table 2-1 Summary of Data Gaps and Proposed Data Collection and Table 3-1 Summary of Stormwater System Sampling Activities Locations | Revise the table to list autosamplers as the stormwater sampling method for the private conveyance locations. | Table 3-1 has been updated with proposed sampling equipment for the private conveyance systems. | | | BWG |
| 23e | 2037 | Table 2-1 Summary of Data Gaps and Proposed Data Collection and Table 3-1 Summary of Stormwater System Sampling Activities Locations | WR-16 is identified in Table 3-1 as a location for stormwater grab and manual solid grab sampling while WR-15 is not; however, WR-15 is identified in Figure 3-1 for stormwater grab and manual solid grab sampling while WR-16 is not. Revise Table 3-1 or Figure 3-1 for consistency. | Table 3-1 has been revised to show sample collection in the WR-15 versus WR-16 system. | | | BWG |
| 23f | 2038 | Table 2-1 Summary of Data Gaps and Proposed Data Collection and Table 3-1 Summary of Stormwater System Sampling Activities Locations | Revise the notes at the bottom of Table 3-1 to define what the Morrison Bridge Datum correction is and how it is calculated using the USGS gaging station 14211720 gage height of 1.55 feet above National Geodetic Vertical Datum of 1929. | The note regarding the definition and calculation of the Morrison Bridge Datum correction has been updated to be consistent with EPA's comment and https://www.portlandoregon.gov/transportation/article/70676. | | | BWG |
| 24 | 2039 | Table 4-1 Summary of Sample Activities, Numbers, and Analyses | Revise the table to distinguish between the number of stormwater and stormwater solids grab samples collected from private stormwater conveyance systems. | Table 3-1 has been updated to distinguish between the number of stormwater and stormwater solids samples from private conveyance systems | | | HGL |
| 25 | 2040 | Appendix A, SOP A-5 (Gravity Marine SOP SW-27), High-Volume Storm Water Sampling for Analysis of Compounds with Low Detection Limits | Revise the SOP to include the potential use of the submersible pump and intermediate carboy that is described in Section 4.1. The SOP should specify pump types (e.g., allowable construction materials and no filter screen), how to manage flow rate so there is no overflow in the intermediate carboy, how the pump intake will be deployed in the water column, and pump and carboy decontamination procedures. | The SOP has been revised. | | | BWG/Gravity |

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| 26 | 2041 | Appendix A, SOP SW-31, Sediment Trap Installations and Removals | SOP SW-31 should be removed from the SRASP because it is for sediment traps that are deployed in the river and is not applicable to in-pipe stormwater applications. | SOP SW-31 will be removed from the SRASP. | | | HGL |
| Editorial Comments on the SRASP | | | | | | | |
| 1 | 2042 | Section 2.2 Riverbank Conditions, bullet 1, page 2-2 | Correct the DEQ ECSI site number reference in the first bullet. DEQ ECSI site 277 is a different site that is north of the University of Portland; it is not the referenced riverbanks adjacent to the SIB Project Area. | The DEQ ECSI number has been corrected to 271. | | | BWG |
| 2 | 2043 | Section 2.2 Riverbank Conditions, page 2-2 | Rephrase the first sentence of the last paragraph to read more clearly. The meaning of the part that reads "…with an active remedy component that are part of RD" is particularly unclear. | The sentence has been revised to read as follows: "The RD will include measures to remediate (i.e., stabilize via capping and/or excavation) the three riverbanks identified in the ROD and any other riverbanks within the SIB Project Area identified as needing remedial action. These riverbanks will be determined based on the combined results of the first and second phases of the riverbank evaluation in accordance with the criteria specified in the ROD." | | | HGL |
| 3 | 2044 | Section 3.1 Stormwater Outfall and Conveyance System Sampling, page 3-2 | Specify the media type (i.e., solids or stormwater) for the manual grab samples that are described in the last paragraph on page 3-2. It is evident based on the text on page 3-3 that the text is referring to stormwater solids, but that should be clarified up front. | The text has been revised to specify that manual grab samples of stormwater solids will be collected from laterals in the city's conveyance system prior to deployment of in-line sediment traps. | | | BWG |
| 4 | 2045 | Section 4.1 Stormwater and Stormwater Solids Sampling, page 4-1, Section 4.1.2.1 Particulate Phase pages 4-4 and 4-5, Section 4.1.3 Automatic Stormwater Sampling Methodology for Private Outfalls, page 4-6 | Replace "RPCs" with "ROD Table 17 contaminants" in the sections identified and elsewhere in the report, as needed. | The text has been updated to replace "RPCs" with "ROD Table 17 COCs." | | | HGL |
| 5 | 2046 | Section 4.1 Stormwater and Stormwater Solids Sampling, page 4-2 | Teledyne ISCO is the company name, and "ISCO" is not an acronym for "In Situ Chemical Oxidation." Revise the text accordingly. | The ISCO acronym has been removed. | | | BWG |
| 6 | 2047 | SOP A-4, Storm Drain Sampling and SOP A-6, In-Line Sediment Trap | Remove references to FMC confined space entry standards and replace with HGL requirements for confined space entry. | The references to FMC confined space entry standards have been replaced with references to HGL requirements for confined space entry. | | | HGL |